

NOTES AND COMMENTS

OVIPOSITION BEHAVIOR OF *CHRYSOPS ATLANTICUS* (DIPTERA: TABANIDAE)

The salt marsh deer fly *Chrysops atlanticus* Pechuman is an annoying blood-seeking pest of man and animals along the Atlantic coast, where it often has a negative impact in recreational and agricultural industries (Hansens, 1980). Egg masses and oviposition sites of *C. atlanticus* have previously been reported by Jamnback and Wall (1959) and Magnarelli and Anderson (1979). Although these authors reported finding egg masses on *Spartina alterniflora* Loisel., there have been no previous observations of oviposition other than in the laboratory.

We observed oviposition by 12 female *C. atlanticus* (Table 1) at a salt marsh near Cedarville, New Jersey. Oviposition was observed in early evening, from 1912 hr (EDT) to 2040 hr (mean \pm SE = 36 ± 8 min before sunset). Ten females (83%) oviposited on *S. alterniflora*, but oviposition was also observed on *Spartina patens* (Ait.) and *Distichlis spicata* (L.). In each case the eggs were laid over wet depressions which supported little or no vegetation, as reported by Magnarelli and Anderson (1979).

Female *C. atlanticus* were oriented in a head up position prior to oviposition, then turned 180 degrees (head down). As the female walked down the blade of grass, she repeatedly touched the leaf surface with the tip of her abdomen. When oviposition was initiated, the fly slowly moved down the blade of grass, depositing the eggs for approximately 20 min. The females were easily disturbed if approached by an observer, and left the immediate area. Freshly deposited eggs were white and turned dark brown after several hours. Larvae hatching from the egg masses possessed the exertile stigmatic spine characteristic of *C. atlanticus*.

These data show that *C. atlanticus* oviposits exclusively during the early evening hours. We have observed other fresh egg masses (i.e., white) during the early evening hours but not during the morning or afternoon despite extensive searching. Graham and Stoffolano (1983b) reported oviposition in *Tabanus simulans* Walker over an eight hour period with peak activity during midday. We have frequently observed *Tabanus lineola* F. and *Hybomitra daeckei* (Hine) ovipositing during the early afternoon and late morning, respectively. The ecological significance of temporal partitioning of oviposition among salt marsh tabanid species is unknown, as are the stimuli for ovipositioning. The narrow time span for oviposition of *C. atlanticus* (only 88 min) appears to be unusual for salt marsh tabanids.

In previous reports, *S. alterniflora* was the only plant on which the eggs of *C. atlanticus* were found. While *C. atlanticus* oviposited predominantly on this plant in our study, other plants were also suitable. The dominance of *S. alterniflora* around wet depressions may account for the number of ovipositions observed on this plant. Stimuli associated specifically with wet depressions are probably more important in the choice of an oviposition site for *C. atlanticus* than stimuli associated with a specific plant. *Tabanus simulans* oviposited almost exclusively on *S. alterniflora* and

Table 1. Date, time (EDT), and plant substrate of oviposition by *C. atlanticus* on a salt marsh near Cedarville, New Jersey.

Date	Time	Plant
16 June 81	2010	<i>S. patens</i>
1 July 82	2033	<i>S. alterniflora</i>
7 July 82	2018	<i>S. alterniflora</i>
15 June 83	1931	<i>S. alterniflora</i>
16 June 83	1927	<i>S. alterniflora</i>
16 June 83	2009	<i>S. alterniflora</i>
23 June 83	1948	<i>S. alterniflora</i>
23 June 83	2001	<i>S. alterniflora</i>
23 June 83	2022	<i>S. alterniflora</i>
29 June 83	1912	<i>D. spicata</i>
30 June 83	2040	<i>S. alterniflora</i>
13 July 83	2021	<i>S. alterniflora</i>

may have been responding to plant specific stimuli (Graham and Stoffolano, 1983a, b).

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